



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,059	11/21/2000	Carol L. Thompson	10001152	9197

7590 01/30/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

SHRADER, LAWRENCE J

ART UNIT	PAPER NUMBER
----------	--------------

2124

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/718,059

Applicant(s)

THOMPSON ET AL.

Examiner

Lawrence Shrader

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the amendment filed on October 30, 2003.
2. Claims 1 – 16 remain pending.
3. Applicant's arguments with respect to claims 1 – 16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. The rejection under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is hereby withdrawn in view of correction made to the claim 16 by the Applicant.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buxbaum et al, PCT/US91/00439 (hereinafter referred to as Buxbaum) in view of Vasilik, U.S. Patent 5,515,081, and further in view of Houldsworth, U.S. Patent 6,526,421.

In regard to claim 1:

“First logic...receiving a first set of instructions and generating an initial instruction schedule...including one or more instructions associated with a correctness check function;”

Buxbaum discloses an instruction scheduler (p. 2, lines 12 – 20), but does not disclose inclusion of a correctness check function. However, Vasilik discloses a correctness checking function in the instruction schedule (e.g., Figure 7a) that is called to check an argument (column 11, lines 44 – 47). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, modified by Vasilik to include the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik (column 11, lines 44 – 45).

“Second logic...evaluating the initial instruction schedule to determine ...spare instruction slots into which said one or more instructions associated with the correctness function can be inserted;” Buxbaum discloses an instruction scheduler (p. 2, lines 12 – 20), but neither Buxbaum nor Vasilik discloses a spare slot into which a correctness check function can be inserted. However, Houldsworth checks the instruction schedule for spare instruction slots for garbage collection (column 6, lines 37 – 42). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, with the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik, and further modified by Houldsworth wherein a spare slot is found for the function, because the combination provides a means to insert a function to check the performance of the program as taught by Houldsworth (column 6, lines 44 – 46).

“Third logic...determining a number of additional instruction slots that may be added to the initial instruction schedule without exceeding the run-time performance cost tolerance level”

Buxbaum teaches the creation of instruction slots (Abstract; p. 2, lines 9 – 20) with consideration of performance cost (p. 4, lines 1 – 11).

In regard to claim 2, incorporating the rejection of claim 1:

“Fourth logic...inserting one or more instructions associated with the correctness check function into the spare instruction slots if enough spare instruction slots exist...” Buxbaum discloses an instruction scheduler (p. 2, lines 12 – 20), but neither Buxbaum nor Vasilik discloses a spare slot into which a correctness check function can be inserted. However, Houldsworth checks the instruction schedule for spare instruction slots for garbage collection (column 6, lines 37 – 42). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, with the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik, and further modified by Houldsworth wherein a spare slot is found for the function, because the combination provides a means to insert a function to check the performance of the program as taught by Houldsworth (column 6, lines 44 – 46).

In regard to claim 3, incorporating the rejection of claim 2:

“...if enough spare instruction slots do not exist...fourth logic determines whether the number of additional instruction slots is large enough to accommodate said one or more instructions...” Buxbaum discloses an instruction scheduler (p. 2, lines 12 – 20), but neither Buxbaum nor Vasilik discloses a spare slot into which a correctness check function can be

Art Unit: 2124

inserted. However, Houldsworth checks the instruction schedule for spare instruction slots for garbage collection (column 6, lines 37 – 42). The Houldsworth invention allocates function instructions to a currently used slot if it is large enough (see Figures 3 and 5). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, with the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik, and further modified by Houldsworth wherein a spare slot is found for the function, because the combination provides a means to insert a function to check the performance of the program as taught by Houldsworth (column 6, lines 44 – 46).

In regard to claim 4, incorporating the rejection of claim 1:

“...the initial instruction schedule does not include any instructions associated with the correctness check function.” Buxbaum discloses an instruction scheduler (p. 2, lines 12 – 20) that does not include instructions associated with a correctness function.

In regard to claim 5, incorporating the rejection of claim 1:

“...compiler program including a first code segment for performing initial code generation...a second code segment for evaluating the initial instruction schedule to determine whether a spare instruction slot exists...a third code segment for determining a number of additional instruction slots that may be added to the initial instruction schedule...” The Buxbaum invention implements a compiler in the first stage to reduce the code into a simpler form (p. 5, lines 22 – 23), but neither Buxbaum nor Vasilik discloses a spare slot into which a correctness check function can be inserted. However, Houldsworth checks the instruction schedule for spare instruction slots for garbage collection (column 6, lines 37 – 42). Therefore, it

Art Unit: 2124

would have been obvious to one skilled in the art at the time the invention was made to combine the logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, with the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik, and further modified by Houldsworth wherein a spare slot is found for the function, because the combination provides a means to insert a function to check the performance of the program as taught by Houldsworth (column 6, lines 44 – 46).

In regard to claim 6, incorporating the rejection of claim 2:

“...compiler program including a first code segment that causes the processor to perform initial code generation...a second code segment that causes the processor to evaluate the initial instruction schedule to determine whether a spare instruction slot exists...a third code segment that causes the processor to determine the number of additional instruction slots that may be added to the initial instruction schedule...a fourth code segment that causes the processor to insert said one or more instructions into the spare instruction slots if enough spare instruction slots exist...” The Buxbaum invention implements a compiler in the first stage to reduce the code into a simpler form (p. 5, lines 22 – 23), but neither Buxbaum nor Vasilik discloses a spare slot into which a correctness check function can be inserted. However, Houldsworth checks the instruction schedule for spare instruction slots for garbage collection (column 6, lines 37 – 42). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, with the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik, and further modified by Houldsworth wherein a spare slot is found for the function, because the combination provides a

Art Unit: 2124

means to insert a function to check the performance of the program as taught by Houldsworth (column 6, lines 44 – 46).

In regard to claim 7, incorporating the rejection of claim 6:

“...if enough spare instruction slots do not exist...the fourth code segment causes the processor to determine whether the number of additional instruction slots is large enough to accommodate said one or more instructions...” Buxbaum discloses an instruction scheduler (p. 2, lines 12 – 20), but neither Buxbaum nor Vasilik discloses a spare slot into which a correctness check function can be inserted. However, Houldsworth checks the instruction schedule for spare instruction slots for garbage collection (column 6, lines 37 – 42). The Houldsworth invention allocates function instructions to a currently used slot if it is large enough (see Figures 3 and 5). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the logic to receive a set of instructions and generating an instruction schedule as taught by Buxbaum, with the insertion of a correctness check function to determine the correctness of functions arguments as taught by Vasilik, and further modified by Houldsworth wherein a spare slot is found for the function, because the combination provides a means to insert a function to check the performance of the program as taught by Houldsworth (column 6, lines 44 – 46).

In regard to claims 8 - 12:

Claims 8 – 12 (a method) are rejected for the same corresponding reasons put forth in the rejection of claims 1 – 5 (an apparatus) respectively.

In regard to claims 13 and 14:

Claims 13 and 14 (a computer program) are rejected for the same corresponding reasons put forth in the rejection of claims 1 and 2 (an apparatus) respectively.

In regard to claim 15:

Claim 15 (a computer program) is rejected for the same corresponding reasons put forth in the rejection of claim 7 (an apparatus).

In regard to claims 16:

Claim 16 (a computer program) is rejected for the same corresponding reasons put forth in the rejection of claim 4 (an apparatus).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 5,696,974 to Agrawal et al., regarding function overloading to check correctness.

U.S. Patent 5,819,088 to Reinders, regarding scheduling instructions in available slots.

U.S. Patent 5,835,776 to Tirumalai et al., regarding scheduling instructions by finding vacant slots.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Shrader whose telephone number is (703) 305-8046.

The examiner can normally be reached on M-F 08:00-16:30.

Art Unit: 2124

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703) 305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Lawrence Shrader
Examiner
Art Unit 2124

January 22, 2004

Kakali Chaki
KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100